L'VOV, N.S., inzh.

Automatic welding of joints with an arbitrary position setting.
[Trudy] NTU no.97:150-167 '59. (MIRA 13:5)
(Electric welding)

L'VOV, N.S.

L'VOV, N.S.

N.E.Zhukovskii Student Scientific and Technological Society at the Moscow Technical College. Trudy SNTO MVTU no.3:3-6 '57. (MIRA 10:9)

(Moscow--Technical education)

L'VOV, Nikolay Stepanovich; ZYUZENKOV, I.P., red.; SAVCHENKO, Ye.V., tekhn.red.

[Electric eye; photoelectronic automatic control] Elektricheskii glaz; fotoelektronnaia avtomatika. Moskva, Izd-vo "Znanie," 1960. 55 p. (MIRA 14:1)
(Photoelectric cells) (Automatic control)

27817
S/549/61/000/101/015/015
D256/D304

1.2300

AUTHORS: L'vov, N.S., and Igoshin, A.P., Engineers

TITLE: Welding apparatus for automatic electric-arc welding of curvilinear butt joints

PERIODICAL: Vyssheye tekhnicheskoye uchilishche. Trudy. Svarka tsvetnykh splavov, redkikh metallov i plastmass, no. 101, 1961, 241 - 252

TEXT: After a long preliminary discussion of the need for such an apparatus, alternative methods of automatic control desirable features, earlier developments etc., the apparatus in question is described. Its working principles are shown in Fig. 1. The photo-element 5 monitors the position of the light spot from the source 4 relative to the edge of the line. If the latter departs from the spot an out-of-balance signal is fed from the photoelement into an amplifier 10. The regulating reaction forces the motor 6 to turn one way or the other the lead screw 8, and thus to move the photo-electric head and with it the welding gun nozzle 9 in the direc-

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Welding apparatus for automatic ...

tion, in which the edge of the copying line has departed until the spot becomes accurately positioned over the edge. Since the nozzle is rigidly connected with the photoelectric cell, and the distance between them is the same as that between the probe and the pen in the tracer, then, consequently, as the machine moves, the photoelectric device follows the edge of the copying line, and the welding electrode moves along the axis of the joint. A relay following system is used in preference to one of continual motion due to simplicity of construction and certain other advantages. The speed of response is always a maximum and independent of the degree of unbalance, oscillations in the system can be suppressed, with certain supplementary internal connections results unattainable with other systems can be obtained. The electrical scheme of the system is then shown and explained. The function of the photoelement is to determine the position of the 1 mm diameter light spot relative to the boundary of the line, drawn e.g. in black on a white background, and constituting the program of the system. Of the various types of photoelectric device available an ΦA-1 (FD-1) "photodiode" is used since its small active element and internal lens simp-

Card 2/6

Welding apparatus for automatic ...

fies the optical system requirements. Its sensitivity at 30 mA/m is 200-1000 times greater than that of external photoelectric devices. The "dark current" of the photodiode does not exceed 10-30 micro-A; on illumination the photodiode current is proportioned to the incident light and practically independent of the applied voltage. The spectral characteristic of the photodiode possesses a maximum slightly to the longer-wave side of the maximum in the welding arc radiation, and covers a range of roughly 1.4 - 1.5 micron. Photodiodes have the important disadvantage ofbeing sensitive to atmospheric temperature variations and possessing considerable scattering, however, this is true of all types of photoelements. The voltage in the photodiode circuit is about 30 V and the load resistance 0.6 M-ohm. The amplifier is of a composite type; electronic relay, and electromagnetic. The amplifier first and second cascades operate at fixed signal frequency of 64 c.p.s. - the frequency of the light beam. Negative feedback is in the form of a narrow-band filter, on the voltage-amplifying triode in the second cascade. Thyratron and electric-machine amplifiers are also available for power amplification. In an industrial apparatus, preference

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Welding apparatus for automatic ...

would be given to an electric-machine amplifier, obtaining power directly from the ac mains. The electric motor controlled by the amplifier is of the type СЛ-361 (SL-361), and operated on dc. with independent excitation, with the following parameters: voltage 110 V, armature current 0.75 A, excitation current 0.1 A, power consumed 93.5 watt, useful power 50 watt, speed 3000 r.p.m. The introduction of forced oscillations into the system by applying 50 c.p.s. ac. to one coil of the polarized relay eliminates natural oscillations of the restoring system. Compensating this defect leads to increased sluggishness of correction response, but this can be remedied by increasing the amplification factor. A tachogenerator is also used to provide a correcting negative feedback. The apparatus gives promising results in welding tests. At welding speeds up to 35 m/hr. and angles of deviation up to 10-15° the amplitude of welding head transverse vibrations and deviations from the joint axis can be practically reduced to zero. At speeds up to 70 m/hr. and angular deviations up to 30 these errors can be limited to the order of 0.2-0.3 mm. The apparatus can also be used for cutting and overlaying contours of large expanse. Other types of sensing ele-

Card 4/6

Welding apparatus for automatic ...

ment can also be used (inductive, inductance, capacitance, ionization etc.). When the bends were only slight the element can be firmly installed directly on the welding head at 50-70 mm from the electrode. There are 6 figures and 6 Soviet-bloc references.

Card 5/6

40792

S/125/62/000/010/002/004
D040/D113

1.2300

AUTHOR: L'vov, N.S.

TITLE: Automating the process of guiding a welding head along a curvilinear butt joint

PERIODICAL: Avtomaticheskaya svarka; no. 10, 1962, 9-15

TEXT: The advantages and disadvantages of existing automatic electrode-guiding systems are discussed and tracing system and pickup designs are suggested. The drawbacks include low accuracy, independable pickups and difficulties in tracing the guide groove or line on steep curves. The MVTU im. Baumana (MVTU im. Bauman) has been trying for years to develop universal systems applicable to different metals, thicknesses and curvatures. Three different possible solutions for welding different classes of work are outlined and the suitable application of various pickups is discussed. No system can yet react to all possible changes - changes, for example, in the gap width, edge height and shape and electrode throat; however, some partial solutions have been found. The recommended tracing system, which is illustrated, includes a converter-amplifier and

Card I/2

Automating the process of guiding .....

either a direct connection between the pickup and welding head or a correcting feedback. A tracing system built entirely of electric elements is considered best (even if a hydraulic or pneumatic main is available) and continuous tracing is preferred to relay systems. Existing Soviet equipment was designed without thought for future automation and is therefore somewhat inadequate for the purpose. The author concludes that engineers should strive to develop self-adjusting systems which could extract information on the shape and size of the butt weld and use this data for automatically regulating the welding conditions. There are 4 figures.

ASSOCIATION: MVTU im. Baumana (MVTU im. Bauman)

SUBMITTED: April 20, 1962

L'VOV, N.S.

Automatizing the direction of a welding head along a curvilinear butt joint. Avtom.svar. 15 no.10:9-15 O '62. (MIRA 15:11)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana.

(Electric welding) (Automatic control)

L 15539-63 EWT(d)/EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4 JD/HM

ACCESSION NR: AP3005549 S/0118/63/000/007/0019/0022 69 66

AUTHOR: Akulov, A. I. (Candidate of technical sciences, Lenin prize recipient); L'vov, N. S. (Candidate of technical sciences)

TITLE: Using radioactive isotopes in automation of welding processes

SOURCE: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 7, 1963, 19-22

TOPIC TAGS: welding, automatic welding, radioactive isotope

ABSTRACT: An experimental investigation is reported of "the possibility of developing a follower system for a butt and resetting unit that would be a part of the automatic [illegible]-control system." Various tracks of development are discussed. The [illegible]ated primary element includes a radiation source and a receiver, and [illegible]ds to lateral-butt deviation and to [illegible]viation of the weld width and thickness [illegible]et values. A self-quenching gas counter was selected for sensing the radi[illegible]. Data illustrating the sensitivity of MS-12, MS-13, STS-1,

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L 15539-63

ACCESSION NR: AP3005549

3

and STS-5 gas counters is supplied, as well as characteristics of an ionization differential primary element based on MS-13 counters. Block diagrams of the follower and the automatic welding-control system are presented and discussed; only open-type (with gaps 0.1-0.3 mm) butt welds are held possible. Orig. art. has: 5 figures and 3 formulas.

ASSOCIATION: MVTU im. Baumana (Moscow Higher Technical School)

SUBMITTED: 00 DATE ACQ: 29Aug63 ENCL: 00

SUB CODE: IE NO REF SOV: 000 OTHER: 000

Card 2/2

ACCESSION NR: AP3002507 S/0135/63/000/006/0034/0036

AUTHORS: L'vov, N. S. (Engineer); Igoshin, A. P. (Engineer)

TITLE: Guiding system ASID-3m for welding of thin nonmagnetic materials

SOURCE: Svarochnoye proizvodstvo, no. 6, 1963, 34-36

TOPIC TAGS: nonmagnetic material, welding, thin sheet, guiding system, ASID-3m device, automatic guider, magnetic control

ABSTRACT: The most accurate direction of a welding electrode along the connection was achieved by an indirect guiding method. The ASID-3m device was designed by MVTU for this purpose. Its working principle is based on magnetic control which depends on transmitter inductance variation related to the type of current and frequency, magnetic permeability and specific resistivity of the metals welded, and thickness of metal sheets. Other factors are related to the transmitter position with respect to welding connections and the types of connection. The investigation results showed that accurate automatic welding machines with welding speeds of 80-100 m/hr can be constructed. The error in the position of the ASID-

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ACCESSION NR: AP3002507

3m electrode with respect to the butt axis did not exceed 0.2-0.3 mm. This device proved to be very reliable, well balanced, and easily adjustable to different welding conditions. Further increase in the accuracy of this automatic guider would require the design of more complicated correcting devices. Orig. art. has: 4 figures and 4 formulas.

ASSOCIATION: MVTU im. Baumana (MVTU)

SUBMITTED: CO DATE ACQ: 12Jul63 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

Card 2/2

L'VOV, N.S., kand. tekhn. nauk; AKULOV, A.I., kand. tekhn. nauk

Prospects of the automation of arc welding. Mekh. i avtom. proizv. 18 no.4:18-20 Ap'64.

ACC NR: AP6021801 SOURCE CODE: UR/0413/66/000/012/0064/0064

INVENTOR: L'vov, N. S.

ORG: none

TITLE: A device for directing an automatic welding machine along the welded joint. Class 21, No. 182817

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 12, 1966, 64

TOPIC TAGS: welding, butt welding, automatic welding, welding equipment, welding technology

ABSTRACT: This Author Certificate presents a device for directing an automatic welding machine along the welded joint. The device contains a gauge connected to the joint, a gauge signal converter, a gauge-propelling mechanism, a mechanism for recording the trajectory of gauge travel, a counting mechanism, a converter for the signal of the counting mechanism, and a driving mechanism for the transverse motion of the automatic driving machine (see Fig. 1). To simplify the device, the mechanism for recording the trajectory of gauge travel is made in the form of a drum revolving with the velocity of welding. The drum is provided with movable rods placed at its periphery. A guide is mechanically connected to the gauge in such a way that during its turning it places the movable rods so that their tips form a line

UDC: 621.791.75.037

Card 1/2

ACC NR: AP6021801

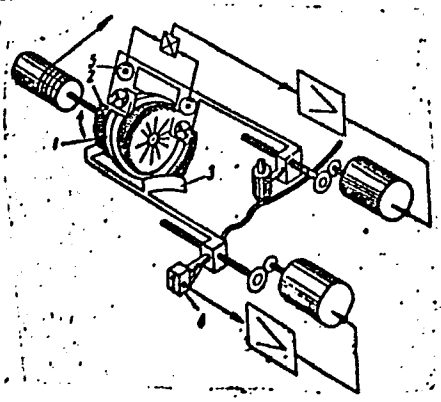

Fig. 1. 1 - drum; 2 - rods; 3 - guide; 4 - gauge; 5 - photocell

reproducing the line of contact. The latter is controlled by the counting mechanism, such as a photocell. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 05Jul62

Card 2/2

ACC NR: AP7006684 (A) SOURCE CODE: UR/0145/66/000/010/0159/0164

AUTHOR: L'vov, N. S. (Candidate of technical sciences)

ORG: None

TITLE: A combination system for automation of arc welding containing elements for automatic adjustment of the welding cycle

SOURCE: IVUZ. Mashinostroyeniye, no. 10, 1966, 159-164

TOPIC TAGS: arc welding, automatic welding, welding equipment, industrial automation

ABSTRACT: The author describes a combination system based on the ADS-1000-2 automatic welding machine developed at the Moscow Technical College im. Bauman for automatically orienting the welding electrode and controlling arc conditions during the welding cycle. The system includes several servomotors and regulators for correct orientation of the welding electrode with respect to the joint and for producing a seam of a given quality. Orientation of the electrode is accomplished by two systems, one keeping the welding head on the joint in the horizontal direction and the other maintaining a given arc length. A schematic diagram of the combination system is given together with a detailed description of the operating principles of the main components. The article was presented for publication by Doctor of technical sciences G. A. Nikolayev, Professor at the Moscow Technical College im. N. E. Bauman. Orig. art. has: 2 figures.

SUB CODE: 13/ SUBM DATE: 2Jul65/ ORIG REF: 007

Card 1/1 UDC; 621.791.75

ACC NR: AT7007347 (N) SOURCE CODE: UR/0000/66/000/000/0048/0052

AUTHOR: L'vov, N. S.

ORG: None

TITLE: Automating arc welding of curved seams

SOURCE: Soveschaniye po avtomatizatsii protsessov mashinostroyeniya. 4th, 1964. Avtomatizatsiya protsessov svarki i obrabotki davleniyem (Automation of welding and pressure treatment processes); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1966, 48-52

TOPIC TAGS: automatic welding, industrial automation, welding technology, servosystem, seam welding

ABSTRACT: The author discusses the problems involved in designing a tracking system and pickup for automatically guiding a welding head along a curved seam. In the simplest system (Figure 1), the tracking pickup is located directly in from of the welding head. The signal from pickup 1 is fed to converter-amplifier 2 and from there to electric motor 3 which drives speed reducer 4 to move welding head 5 to which the pickup is rigidly connected. The error in the position of the electrode with respect to the seam increases with the curvature of the seam and the distance between pickup and welding electrode. When the seam to be welded has considerable curvature, the pickup may be rigidly connected to the welding head only if it is located to one side (Figure 2). In this case, an auxiliary line L must be made parallel to the seam 8.

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ACC NR: AT7007347

Fig. 1

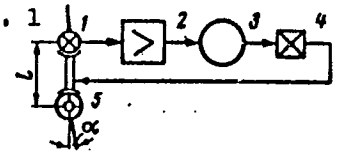


Fig. 2

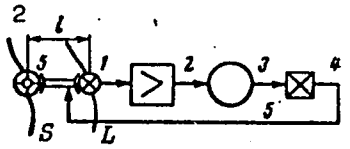
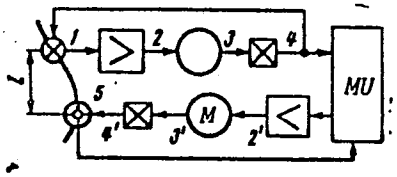


Fig. 3



In this system the pickup follows the line which serves as a program for operation of the tracking system. Where the curvature of the seam is great and it is impossible or undesirable to have an auxiliary line, the connection between pickup 1 and welding head 5 (Figure 3) must not be rigid although the distance l between them should be held constant. The control signal from the pickup is stored for the time it takes the welding head to pass through the distance separating the two units. The signal is then sent from the memory unit MU to converter-amplifier 2' of the tracking system

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ACC NR: AT7007347

which controls the position of the welding head. Thus when the curvature of the seam is great, the installation may be considered as made up of two tracking systems, one of which (1-2-3-4-MU) is designed for guiding the pickup along the seam and setting up the program, while the other (MU-2'-3'-4'-5) is designed for guiding the welding head. The positional error in this case is determined by the error in recording and reading out signals in the memory unit and by the errors in each of the tracking systems. Copper, steel, tungsten, graphite and aluminum self-quenched gas counters were experimentally studied to determine their applicability as pickups for an automatic tracking system based on the radiosiotope method. The possibilities of photoelectric and electromagnetic methods for automation of electric arc welding are also discussed. Several successful tracking systems were developed on the basis of each method. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: None

Card 3/3

S/054/62/000/004/001/017
B101/B186

AUTHORS: L'vov, O. I., Pavinskiy, P. P.

TITLE: Kinetic equation for excitons in the Cu_2O crystal

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 4, 1962, 23-28

TEXT: Equations are set up for the dependence of the photocurrent in Cu_2O on the light intensity in the region of exciton absorption under the following conditions: (1) If the light frequency is smaller than the edges frequency of self-absorption of the crystal, current carriers are formed from the excitons. The absorption of excitons is assumed to be a direct form of light absorption by Cu_2O. (2) As Cu_2O possesses p-type conductivity, the electrons formed by dissociation of the exciton must be trapped quickly. (3) The dark generation of holes must be considered in the corresponding temperature range. Taking account of all possible processes with band electrons (concentration n_-), holes (n_+), trapped electrons (m), acceptor centers (M), and excitons (N) participating, the following set of

Kinetic equation for excitons...

equations is found for their concentrations: $dn_-/dt = \delta_1 n_- N + \delta_2 n_+ N + \Omega mN - \varepsilon n_-(M - m) - \gamma_1 n_- n_+ + \xi N^2$; $dn_+/dt = \delta_2 n_+ N + \delta_1 n_- N + \eta(M - m)N - \gamma_1 n_- n_+ - \gamma_2 mn_+ + \xi N^2 + a(T)$; $dm/dt = \varepsilon n_-(M - m)N + \eta(M - m)N - \Omega mN - \gamma_2 mn_+ + a(T)$; $dN/dt = \alpha - \delta_1' n_- N - \delta_2' n_+ N - \eta(M - m)N - \beta_1 N - \gamma N^2 - \Omega mN + \sigma n_- n_+$. This covers the following processes: (a) generation of excitons by light of intensity I (coefficient α); (b) dissociation of the exciton in the acceptor center and possible trapping of electrons on the acceptor level (coefficient η); (c) radiationless or spontaneous optical recombination of the exciton (β_1); (d) collision of two excitons and dissociation of one of them with formation of two current carriers e_- and e_+ (ξ), or recombination of one exciton (radiationless or optical); the total process is described by coefficient γ; (e) recombination of the exciton with energy transfer to an electron trapped by the acceptor (Ω); (f) collision of the exciton with a free carrier e_- or e_+ and formation of a new pair of carriers (coefficients δ_1 and δ_2) due to dissociation of the exciton; the coefficients δ_1' and δ_2' also involve the recombination of the exciton in a collision with

e_- or e_+; (g) recombination of the carriers e_- and e_+ (γ_1) with possible formation of a "secondary" exciton (σ); (h) recombination of a hole with a trapped electron (γ_2); (i) trapping of an electron on acceptor levels (ε); (k) thermal generation of dark holes described by the function a(T). Discussion of the set of equations with respect to the three cases: (1) photocarriers contribute very little to a steady density of the dark carriers; (2) density of photocarriers and of dark carriers is of the same order; (3) absence of dark conductivity at low temperatures has the consequence that the photocurrent may be proportional to $\sqrt{I}$ at low temperatures and small light intensities, also that the dependence of the photocurrent on the light intensity approaches linearity when the temperature rises. The interaction of excitons is the principal cause of divergence from linearity. The English-language reference is: R. Elliott, Phys. Rev., 108, 1384 (1957).

SUBMITTED: July 3, 1962

Card 3/3

L'VOV, O.I.; PAVINSKIY, P.P.

Kinetic equation for excitons in Cu_2O crystals. Vest.LGU 17 no.22:23-28 '62. (MIRA 15:12)
(Copper oxide crystals) (Excitons)

L'VOV, O. I.

Saturation of absorption in an oscillatory spectrum. Dispersion of the saturation. Vest. LGU 19 no.10:11-23 '64.
(MIRA 17:7)

L 2130-65 EWA(k)/FBD/EWT(l)/EEC(k)-2/K/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(m)-2/
EWA(h) Pn-4/Po-4/Pf-4/Pi-4/Pl-4 IJP(c)/RAEM(a)/BSD/AFWL/ASD(a)-5/ASD(d)/AFETR/
SSD/ESD(gs)/ESD(t)/RAEM(t) WG
ACCESSION NR: AP4041830 S/0054/64/000/002/0011/0023
87
86

AUTHOR: L'vov, O.I.

TITLE: Saturation of absorption in the vibrational spectrum. Dispersion of saturation

SOURCE: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 2, 1964, 11-23

TOPIC TAGS: laser, maser, absorption saturation, perturbed density matrix, molecular energy levels population, laser population inversion, stimulated emission

ABSTRACT: The saturation of absorption of the "pumped" frequency with the increase of the intensity in the lasers is caused by the equalization of the population of the energy levels under consideration. For the theoretical treatment of this phenomenon, the author considers a system of anharmonic oscillators in an electromagnetic field, and computes the behavior of the system by the perturbed density matrix method. The saturation of absorption depends on the relations between the incident radiation density and the lifetime of the excited states. The saturation factor as a function of monochro-

Card 1/2

L 2130-65
ACCESSION NR: AP4041830

matic radiation frequency is derived for a certain relationship between the line width and the anharmonic term shift. "The author is grateful to Prof. P. P. Pavinskiy for his interest and helpful suggestions." Orig. art. has: 67 equations.

ASSOCIATION: None

SUBMITTED: 29Dec63 DATE ACQ: ENCL: 00

SUB CODE: NP, OP NR REF SOV: 001 OTHER: 005

Card 2/2

ACC NR: AP7005008 SOURCE CODE: UR/0054/66/000/003/0141/0143

AUTHOR: L'vov, O. I.; Fridrikh, V. L.

ORG: none

TITLE: On auto-ionization-type transitions involving excitons

SOURCE: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 3, 1966, 141-143

TOPIC TAGS: exciton, electron transition, inelastic scattering

ABSTRACT: The following expression is derived for the cross section of inelastic scattering of electrons by excitons:

$$\sigma = \frac{2^{13}\pi^3 e^4 n_0 n_{ex} a_0^4 \lambda_0^3}{\varepsilon^2 (\pi T)^2 \left(a_0^2 + 4\lambda_0^2\right)^6} \left(\frac{m}{m_{ex}}\right)^{3/2} \cdot \frac{\exp\left[-\frac{\hbar^2 q^2}{2m\pi T}\right]}{q},$$

where n_0 is the density of lattice points, n_{ex} the exciton concentration, and a_0^{-1} the effective Bohr radius of the s-like function $\varphi(0)$. Also, $\lambda_0 = \hbar^{-1}(2mE)^{1/2}$, E being the mean excitation energy of the exciton and q^{-1} the Debye screening radius. The expression

$$W = \frac{2^{17} e^4 n_0 n_{ex} a_0^5 \lambda_0^3 m}{3^{10} \varepsilon^2 \hbar \pi T \left(a_0^2 + 4\lambda_0^2\right)^6 m_{ex}}$$

is obtained for the probability of an ionizing transition in the "collision" of two

UDC: 548.0:53

ACC NR: AP7005008

excitons. The rate constant of auto-ionization of excitons is $\gamma \simeq 1.5 \times 10^{-11}$ cm^{-3} sec^{-1}. Authors thank Prof. P. P. Pavinskiy for his interest and attention to this work. Orig. art. has: 6 formulas.

SUB CODE: 20/ SUBM DATE: 27Dec65/ ORIG REF: 003/ OTH REF: 008

Card 2/2

1. O. S. L'VOV.

2. USSR (600)

4. Bees

7. Factors determing where the bee cluster will be formed in the fall. Pchelovodstvo 29 no. 12. 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

L'VOV, O. S. Cand Biol Sci -- (diss) "The biology of colonies of wintering bees in connection with the problem of ~~the~~ basis for the necessary ~~creation~~ formation of winter nests for bees." Mos, 1957. 26 pp (Mos Order of Lenin and Order of Labor Red Banner State Univ im M. V. Lomonosov. Biol-Soil Faculty. Chair of Zoology of Invertebrates), 150 copies (KL, 11-58, 115)

L 10200-66 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AP5028508 SOURCE CODE: UR/0286/65/000/020/0094/0094

52
B

AUTHOR: L'vov, O. S. 44

ORG: none

TITLE: A method for performing logic operations with ferrite-diode elements. Class 42, No. 175737 166,44

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 94

TOPIC TAGS: logic element, logic circuit, ferrite, semiconductor diode

ABSTRACT: This Author Certificate presents a method for performing logic operations with ferrite-diode elements. The elements are powered by alternating current. In order to reduce the number of diodes and resistors and to increase reliability, all the cores of the logic element are divided into two groups. Each group is interconnected by its own output winding. Output paraphase signals forbid the recording of "1" of one or another group, depending upon the conditions for performing a specific logic operation.

SUB CODE: 09/ SUBM DATE: 20Feb64

Card 1/1 UDC: 681.142

ZAL'TS, A.S.; OKS, G.Kh.; L'VOV, P.A.

Mechanization and automation of cold staming in small-lot production. Mashinostroitel' no.1:14-16 Ja '63. (MIRA 16:2)
(Sheet-metal work--Technological innovations)
(Automation)

ZAL'TS, A.S.; OKS, G.Kh.; L'VOV, P.A.

Mechanization and automatic control of sheet metal working processes in small batch production. Kuz.-shtam.proizv. 5 no.4:42-43 Ap '63. (MIRA 16:4)
(Sheet metal working machinery)
(Automatic control)

ZAL'TS, A.S.; OKS, G.Kh.; L'VOV, P.A.

Improving the design and technological documentation.
Mashinostroitel' no.7:34-35 Jl '63. (MIRA 16:9)
(Machinery--Design and construction)

ZALTS, A.S. [Zal'ts, A.S.]; OKS, G.Kh.; LVOV, P.A. [L'vov, P.A.]

Mechanization and automation of cold stamping processes in small-scale production. Tekhnika Bulg 12 no.5:28-29 '63.

ZAL'TS, A.S.; OKS, G.Kh.; L'VOV, P.A.

Economical universal die block. Kuz.-shtam. proizv. 5 no.12:41-43 D '63. (MIRA 17:1)

ZAL'TS, A.E.; OKS, G.Kh.; LVOV, Ye.A.

Multiple stamping with interchangeable dies. Mashinostroitel' no.5: 32-34 My '65. (MIRA 18:5)

1. L'VOV, P. PASTUKHOVA, P. VISHNIAKOVA, A.

2. USSR (600)

3. Lumbering

4. Seedling plots in mechanized skidding.
Les. prom-st No. 11 - 1952.

9. Monthly List of Russian Acessions, Library of Congress, February, 1953. Unclassified.

L'VOV, P.L.

The most important ornamental trees and shrubs of Makhachkala. Biul. Glav.bot.sada no.20:72-84 '55. (MLRA 8:9)

1. Dagestanskiy gosudarstvennyy pedagogicheskiy institut.
(Makhachkala—Plants, Ornamental)

L'VOV, P.L.

Biology of the southern cornel (Thelycrania australis). Biul. Glav. bot. sada no.29:93-95 '57. (MIRA 11:1)

1. Dagestanskiy pedagogicheskiy institut im. Suleymana Stal'skogo.
(Samur Delta--Dogwood)

VIKTOROV, A.F.; GIMMEL'REYKH, V.A.; L'VOV, P.L.; MIKULICH, I.N.; EL'DAROV, M.M.; MASLOV, Ye.P., kand.geograf.nauk, starshiy nauchnyy sotrudnik, otv.red.; GODOVANETS, Z.A., red.; VEHBITSKAYA, M., tekhn.red.

[Daghestan A.S.S.R.; survey of physical and economical geography] Dagestanskaia ASSR; fiziko-geograficheskii i ekonomiko-geograficheskii obzor. Makhachkala, Dagestanskoe uchebno-pedagog.izd-vo, 1958. 252 p. (MIRA 12:7)

1. Institut geografii Akademii nauk SSSR (for Maslov).
(Daghestan--Geography)

L'VOV, P.L.

Ornamental trees and shrubs in Karanogayskiy District, Daghestan.
Biul.Glav.bot.sada no.35:21-22 '59. (MIRA 13:2)

1. Dagestanskiy gosudarstvennyy universitet im.V.I.Lenina.
(Karanogayskiy District--Plants, Ornamental)
(Trees)
(Shrubs)

L'VOV, P.L.

Hippomarathrum microcarpum (M.B.) B.Fedtsch., a new aromatic plant. Bot. zhur. 44 no.2:197-198 F '59. (MIRA 12:6)

1.Dagestanskiy gosudarstvennyy universitet im. V.I. Lenina, Makhachkala.

(Aromatic plants) (Hippomarathrum)

L'VOV, P.L.

Present state of the flora of the "aeolian desert" at the foot of Daghestan. Bot. zhur. 44 no.3:353-359 Mr '59.
(MIRA 12:7)

1.Dagestanskiy gosudarstvennyy universitet im. V.I. Lenina, Makhachkala.
(Kumtorkala region--Botany) (Sand dunes)

L'VOV, P.L.

Taxus baccata L. in Daghestan. Bot.zhur. 44 no.6:853-854 Je '59. (MIRA 12:11)

1. Dagestanskiy gosudarstvennyy universitet, Makhachkala. (Daghestan--Yew)

L'VOV, P.L.

Fragments of sparse pine woodland in the arid foothills of Daghestan. Bot.zhur. 44 no.11:1633-1639 N '59.
(MIRA 13:4)

1. Dagestanskiy gosudarstvennyy universitet im. V.I.Lenina, g.Makhachkala.
(Daghestan--Pine)

L'VOV, P.L.

Characteristics of some forest types in the piedmont area of Daghestan. Nauch. dokl. vys. shkoly; biol. nauki no.3:142-145 '60. (MIRA 13:8)

1. Rekomendovana kafedroy botaniki Dagestanskogo gosudarstvennogo universiteta im. V.I. Lenina.
(Daghestan--Forest ecology)

L'VOV, P.L.

Polymerous flower of Phelipaea coccinea Poir. Bot.zhur. 45 no.3:414-415 Mr '60. (MIRA 13:6)

1. Dagestanskiy gosudarstvennyy universitet im. V.I.Leninga, Makhachkala.
(Broom rape) (Abnormalities (Plants))

L'VOV, P.L.

Occurence of Nectaroscordum tripedale (Trautv.) Grossh. in the delta of the Samur River. Bot. zhur. 46 no.8:1210-1212 Ag '61. (MIRA 15:1)

1. Dagestanskiy gosudarstvennyy universitet imeni Lenina, g. Makhachkala.
(Samur Valley--Nectaroscordum)

L'VOV, P.L.

Discovery of Amygdalus nana L. in Daghestan. Nauch. dokl. vys. shkoly; biol. nauki no.2:146-150 '61. (MIRA 14:5)

1. Rekomendovana kafedroy botaniki Dagestanskogo gosudarstvennogo universiteta im. V.I.Lenina.
(DAGHESTAN--ALMOND)

L'VOV, P.L.

Ornamental trees and shrubs of the low country of Daghestan.
Biul. Glav. bot. sada no.40:24-26 '61. (MIRA 14:10)

1. Dagestanskiy gosudarstvennyy universitet imeni V.I. Lenina, g. Makhachkala.
(Daghestan--Plants, Ornamental)

L'VOV, P.L.

Brief survey of forest vegetation in the Samur Delta, Daghestan A.S.S.R. Bot. zhur. 46 no.1:102-107 Ja '61. (MIRA 14:3)

1. Dagestanskiy gosudarstvennyy universitet im. V.I.Lenina, Makhachkala.
(Samur Delta--Forest ecology)

L'VOV, P.L.

A study on the forest vegetation in the environs of Ali-Tala, Buynaksk District, Daghestan A.S.S.R. Bot. zhur. 48 no.12: 1822-1825 D '63. (MIRA 17:4)

1. Dagestanskiy gosudarstvennyy universitet imeni Lenina, Makhachkala.

L'VOV, P.L.; SOLOV'YEVA, P.P.

Distribution of Hedera pastuchowii Woronow in Daghestan. Nauch. dokl. vys. shkoly; biol. nauki no.1:109-112 '64. (MIRA 17:4)

1. Rekomendovana kafedroy botaniki Dagestanskogo gosudarstvennogo universiteta im. V.I.Lenina.

L'VOV, P.L.

Thin pine and oak forests with birch admixture in dry piedmont regions of Dagestan. Nauch. dokl. vys. shkoly; biol. nauki no.1: 127-130 '65. (MIRA 18:2)

1. Rekomendovana kafedroy botaniki Dagestanskogo gosudarstvennogo universitets im. V.I. Lenina.

L'VOV, P.L.

Oak forests of Daghestan. Nauch.dokl.vys.shkoly; biol.nauki no.4:140-143 '65. (MIRA 18:10)

1. Rekomendovana kafedroy botaniki Dagestanskogo gosudarstvennogo universiteta im. V.I.Lenina.

L'VOV, P.L.

Plain forests of Khasavyurt District in the Daghestan A.S.S.R. Bot.zhur. 50 no.2:228-234 F '65. (MIRA 18:12)

1. Dagestanskiy gosudarstvennyy universitet imeni V.I. Lenina, Makhachkala. Submitted March 12, 1962.

L'VOV, P. N.

"The preliminary restroation of spruce and its use to restore forests on concentrated cuttings of Arkhangel'sk Oblast." Acad Sci USSR. Inst of Forestry. Arkhangel'sk, 1956. (Dissertations for the Degree of Doctor in Agricultural Science)

So: Knizhnaya letopis', No. 16, 1956

L'VOV, P. N. and SINNIKOV, A. S.

"The Utilization of the Typology of Clearance in Practical Forest Economy."

report presented at the Conference on Forestry, Arkhangel'sk, 14-15 April 1958
(Vest. Ak Nauk SSSR, 1958, No. 7, pp. 133-4)

L'VOV, P. N.

23193 Mekhanizatsiya obmazki elektrodov. Mekhanizatsiya ctpoit-ya, 1949, No. 7, c. 20.

SO: LETOPIS' NO. 31, 1949

L'VOV, P. N.

26396 Prodleniye sroka sluzhby detaley mashin putem naplavki. Mekhanizatsiya stroit-va, 1949, No. 8, s. 20-21.

SO: LETOPIS' NO. 35, 1949

L'VOV, P.N., kandidat tekhnicheskikh nauk; KHRUSHCHOV, M.M., doktor tekhnicheskikh nauk, professor, retsenzent; KEDROV, A.I., kandidat tekhnicheskikh nauk, redaktor; KOVALIKHINA, N.F., tekhnicheskiy redaktor

[Welding in resurfacing quick-wearing parts of road machinery] Remont bystroiznashivaiushchikhsia detalei dorozhnykh mashin pri pomoshchi naplavki. Moskva, Izd-vo dorozhno-tekhn. lit-ry, 1952. 79 p. [Microfilm] (MLRA 7:10)
(Road machinery- Repairing)
(Welding)

L'vov, P.N.

USSR/ Engineering - Metallurgy

Card 1/1 Pub. 128 - 7/25

Authors : L'vov, P. N.

Title : The wear and the increase in resistance to wear of components for construction and road building machinery

Periodical : Vest. mash. 1, 43-48, Jan 1955

Abstract : The editorial presents results of tests conducted by the All-Union Scientific Research Institute for Road Building Machinery, to determine the causes of wear and the increase in resistance to wear of machine components made of various type steels and alloys. Technical data is given on chemical composition of alloys and metals used for the above mentioned tests, together with the description of build-up and hardening processes. Illustrations; drawings; diagrams; tables.

Institution : .....

Submitted : .....

KERMAN, Zyama Yefimovich; ANAN'YEV, Garri Dmitriyevich; L'VOV, P.N., kand. tekhn. nauk, retsenzent; DUBASOV, A.A., inzh., red.; SOKOLOVA, T.F., tekhn. red.

[New methods for repairing machinery] Novyi metod remonta mashin. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 133 p. (MIRA 14:9)
(Road machinery--Maintenance and repair)
(Building machinery--Maintenance and repair)

L'VOV, P.N., inzh.

Choosing the metals for machine parts. Mekh. stroi. 18 no.11:18 N '61. (MIRA 16:7)
(Earthmoving machinery—Maintenance and repair)
(Hard facing)
(Road machinery—Maintenance and repair)

L'VOV, Petr Nikolayevich, kand. tekhn. nauk; SMIRNOVA, V.L., red. izd-va; CHERNOVA, Z.I., tekhn. red.; VLADIMIROVA, L.A., tekhn. red.

[Wear resistance of parts of construction and road machinery] Iznosostoikost' detalei stroitel'nykh i dorozhnykh mashin. Moskva, Mashgiz, 1962. 86 p. (MIRA 15:9)
(Construction equipment) (Road machinery)

KRASOVSKIY, L.I.; L'VOV, P.N.; VASILEVICH, V.I.

Reviews and bibliography. Bot.zhur. 50 no.11:1648-1650 N '65. (MIRA 19:1)

1. Arkhangel'skiy lesotekhnicheskiy institut. Submitted May 5, 1965 (for Krasovskiy, L'vov). 2. Botanicheskiy institut imeni V.L.Komarova AN SSSR, Leningrad. Submitted May 4, 1965 (for Vasilevich).

RUDOY, M.; L'VOV, S.

Modernization of intake bins for corn. Muk.-elev. prom. 29 no.6: 31 Je '63. (MIRA 16:7)

1. Rostovskaya mashinoispytatel'naya gruppa Roskhleboprodukt (for Rudoy). 2. Rostovskoye upravleniye khleboproduktov (for L'vov).
(No subject headings)

L'VOV, S.

Shortcomings of the ZSM-50 and ZSM-100 separators. Muk.-elev. prom. 29 no.7:27 Jl '63. (MIRA 17:1)

1. Rostovskoye oblastnoye upravleniye khleboproduktov.

L'VOV, S.D.

Primary sarcoma of the large intestine. Zdrav. Belor. 6 no.9:70-71 S '60. (MIRA 13:9)

(INTESTINES--TUMORS)

L'VOV, S. G., KALIK, I. A., KALISTOV, N. G. and PREOBRAZHENSKIY, N. F.

"Bookkeeping and Control in Communications," 2nd edition - edited by Prof. Ya. M. Gal'perin, Svyaz'izdat, Moscow, 1950.

Translation- No. 464, 26 Sep 1955.

TITCHENKO, Maksim Pavlovich; L'VOV, Sergey Grigor'yevich; KAPLAN, Aron Izrailevich; PEROV, Viktor Yakovlevich; KALLISTOV, Nikolay Grigor'yevich; TATUR, S.K., prof., doktor ekon. nauk, otv.red.; KAZ'MINA, R.A., red.; MARKOCH, K.G., tekhn.red.

[Accounting and analysis of the balance sheet in the communications system] Bukhgalterskii uchet i analiz balansa v khoziaistve sviazi. Pod red. S.K. Tatura. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1958. 357 p. (MIRA 12:1)
(Communication and traffic--Accounting)

TITCHENKO, Maksim Pavlovich; L'VOV, S.G.

[Accounting in self-supporting communications enterprises] Bukhgalterskii uchet v khozraschetnykh predpriiatiiakh sviazi. Moskva, Gos. izd-vo lit-ry po voprosam sviazi i radio, 1960. 95 p. (MIRA 16:4)
(Postal service--Accounting)
(Telecommunication--Accounting)

L 00533-66 EWT(l)/EWP(e)/EWT(m)/EPF(c)/EWP(l)/EWG(n)/EWP(t)/EWP(b) IJP(c)
ACCESSION NR: AP5018640 JD/JG/AT/WH UR/0185/65/010/007/0805/0806

AUTHOR: L'vov, S. M.; Nemchenko, V. P.

TITLE: The Nernst-Ettingshausen effect in titanium, its diboride, carbide, and nitride

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 7, 1965, 805-806

TOPIC TAGS: Nernst effect, titanium, conduction electron, electron mobility, electron scattering, phonon scattering

ABSTRACT: The Nernst-Ettingshausen coefficient is obtained for titanium and its diboride, carbide, and nitride. The concentration of conduction electrons, the mobility, the Fermi energy, the effective mass of the electrons, and the relaxation time are determined for TiB_2 under the assumption of a spherical Fermi surface, a weak magnetic field, and under the assumption that one scattering mechanism predominates employing a one-zone model. The samples were rectangular in shape. A temperature gradient of 20--30 C/cm was maintained. The magnetic field in the gap was 12,000 Oe. The Nernst-Ettingshausen voltage was measured with a PPTN-1 potentiometer with an electrophotooptical amplifier. The experimental results lead to the following values for TiB_2: concentration of conduction electrons -- 3.5×10^{21} cm^{-3}, mobility -- 124 $cm^2/v\text{-}sec$, $r = -0.56$, Fermi energy -- 0.33 eV, effective mass -- 0.26 m_e, re-

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L 00533-66
ACCESSION NR: AP5018640

laxation time -- 1.8×10^{-14} sec. Thus the criteria of strong degeneracy of current carriers and the weakness of the magnetic field are well satisfied. The value of $r = -0.56$ is close to $r = -0.5$ for scattering by acoustic oscillations. The results obtained for TiB_2 are sensible and indicate that the initial assumptions are acceptable. "The authors express their gratitude to V. S. L'vov for participation in a discussion of the obtained results." Orig. art. has: 1 figure, 6 formulas, and 1 table.

ASSOCIATION: Khersons'kyy pedinstytut im. N. K. Krups'koyi [Khersonskiy pedagogicheskiy institut im. N. K. Krupskoy] (Kherson Pedagogical Institute)

SUBMITTED: 05Mar65 ENCL: 00 SUB CODE: SS

NR REF SOV: 005 OTHER: 000

Card 2/2

NESHPOR, V.S.; NEMCHENKO, V.F. [Niemchenko, V.P.]; L'VOV, S.N.[Samsonov, H.V.]

Some electrophysical properties of titanium compounds with non-metallic elements of the fourth group of the periodic table. Ukr. fiz. zhur. 5 no.5:839-842 N-D '60. (MIRA 14:3)

1. Institut metallokeramiki i spetsial'nykh splavov AN USSR i Khersonskiy pedagogicheskiy institut im. N.K. Krupskoy.
(Titanium compounds—Electric properties)

86037
S/020/60/135/003/019/039
B019/B077

24.7700 (1043,1143,1559)

AUTHORS: L'vov, S. N., Nemchenko, V. F., and Samsonov, G. V.

TITLE: Some Principles of Electrical Properties of Borides, Carbides, and Nitrides of Transition Metals of the IV-VI Groups of the Periodic Table

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 3, pp. 577-580

TEXT: The authors conducted measurements of the Hall coefficient, the thermo-emf, and the resistivity of monocarbides, nitrides, and some diborides of the transition metals of the IV-VI groups of the periodic table. The results are shown in Table 1. Using these experimental results the authors calculated the magnitude of $\delta = n_- u_-^2 - n_+ u_+^2$ which is characteristic of the conductivity type. δ is positive in nearly all metal compositions investigated; and this is a proof of the n-type conductivity of these compounds. From the increase of δ during the transition of metals of the IV group to the following group the influence of the electron structure of the metal on the electric properties of the compound is

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Some Principles of Electrical Properties of Borides, Carbides, and Nitrides of Transition Metals of the IV-VI Groups of the Periodic Table

S/020/60/135/003/019/039
B019/B077

studied thoroughly. This influence is found to be very strong. The authors are convinced of the periodic change of the properties of the substances in the metal-boride-carbide-nitride series that the influence of the electronic structure of the metalloid atoms strongly affects the properties of the phases. Legend to Table 1: 1) metal, phase, 2) Hall constant, 3) $\delta \cdot 10^{-23}$ in $cm/v^2 sec^2$, 4) resistivity ρ in $\mu ohm \cdot cm$, 5) thermo-emf in $\mu v/deg$. n_- and n_+ are the concentrations and u_-, u_+ the mobilities of the electrons. There are 1 table and 18 references: 10 Soviet, 3 German and 5 US.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov Akademii nauk SSSR (Institute of Powder Metallurgy and Special Alloys, Academy of Sciences, USSR). Khersonskiy pedagogicheskiy institut im. N. K. Krupskoy (Kherson Pedagogical Institute

Card 2/4

21415

24.7700 1043, 1138, 1160

S/120/61/000/002/028/042
E073/E135

AUTHORS: L'vov, S.N., Nemchenko, V.F., and Marchenko, V.I.

TITLE: On a method of measuring the Hall coefficient and the specific electric resistance of solid high melting point compounds

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.2, pp.159-160

TEXT: The electrical properties of compounds of the transition metals of the fourth to the sixth group of the periodic table with boron, carbon, nitrogen, etc. have been relatively little studied. For such measurements it is difficult to obtain suitable samples and it is also difficult to ensure the supply of a current intensity strong enough for the experiments. In this paper some measures are described which enable these difficulties to be overcome. Specimens of about 14 x 2.5 x 0.6 mm are cut by electro-erosion from the core of compact sintered blanks with the highest uniformity as regards porosity and chemical composition. The specimen must not be polished to a high brightness, since this would cause difficulties in obtaining a strong copper coating, which is necessary for soldering on leads.

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21415

S/120/61/000/002/028/042
E073/E135

On a method of measuring the Hall coefficient and the specific electric resistance of solid high melting point compounds

Such leads cannot be soldered on directly but they can be soldered on by using a thin intermediate coating of metal, for instance copper, at the ends. Such a coating can be deposited electrolytically in a bath of the following composition: water 100 g, $CuSo_4$ 20 g, H_2SO_4 5 g, ethyl alcohol 0.2 g. The obtained copper layer will adhere quite strongly and will be suitable for applying low melting point solders, for instance Wood alloy. The reliability of such contacts was verified on a number of carbides, nitrides, borides and silicides of high melting point metals. Current of a density of up to 300 to 350 A/cm^2 can be passed through the specimen with a stability of the order of the third to fourth decimal place: this is 10 to 15 times as high as the densities obtained by J.M. Bardeen and B.S.Chandrasekhar (J. Appl. Phys., 1958, 28, 1372). As a result, even in materials with low Hall coefficients ($\sim 0.5 \times 10^{-4}$ cm^3/Coulomb), the scatter in the measured voltages will not exceed 1 to 2% in the case of a potentiometric set-up with a sensitivity of 10^{-7} V/scale division.

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S/120/61/000/002/028/042

On a method of measuring the Hall...E073/E135

In specimens of 1.5 mm^2 cross-section applied by the authors, this current density is obtained for a current intensity of 4 to 5 A, which simplifies the current supply to the test set-up. The Hall measurements on solid high melting point compounds can be carried out by the usual method with electromagnets ensuring a field of 12 to 15 kOersted. For convenient measurement, the specimen is placed into a gap of the electromagnet in a special holder, designed to also permit measuring the specific electric resistance of the specimen. It consists of a 2 mm thick pertinax plate 1 (see figure) with an opening 2 of 6 x 6 mm^2 in the centre, on the sides of which are two grooves 3. In these the current leads 5 are held by pressure from two thin brass plates 4. Due to the mobility of the current leads, it is easy to adjust the centre of the specimen to be opposite the metering probes. Into six slots, which are perpendicular to the axis of the holder, thin copper tubes are glued in, in which molybdenum probes 6 (0.8 mm dia.) can move easily but tightly. The middle ones serve for measuring the Hall voltage, the end ones serve for measuring the voltage drop when measuring the specific resistance. The probes are pressed on by means of two screws 7 which carry perspex discs at the ends.

On a method of measuring the Hall ...

Rubber washers 9 are glued on to the faces of the discs so as to produce a tight and uniform pressure on the probes. The holder is connected in the circuit by means of seven pins 11 which are glued into appropriate recesses and are pressed down with the plate 10; these pins are fitted into a block with sockets ("recesses") and fixed to one of the poles of the electromagnet. The second current lead is connected to a separate terminal 12. The holder is convenient and reliable in operation and, particularly, it permits measurement inside a very narrow inter-pole space (3 mm). As a result, a relatively high magnetic potential and a uniform magnetic field can be obtained with relatively small magnets.
There are 1 figure and 3 references: 2 Soviet and 1 non-Soviet.
[Abstractor's Note: This is a slightly abridged translation.]

ASSOCIATION: Khersonskiy pedagogicheskiy institut
(Kherson Pedagogic Institute)

SUBMITTED: February 16, 1960

S/126/61/011/001/014/019
E032/E314

AUTHORS: L'vov, S.N., Nemchenko, V.F., Kosolapova, T.Ya and Samsonov, G.V.

TITLE: On the Electrical Properties of Chromium Carbides

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 11, No. 1, pp. 143 - 145

TEXT: The present authors have measured the resistivity ρ, the Hall coefficient R at room temperature, the thermo-electric power ε_T and the temperature coefficient of resistance α_ρ for $Cr_{23}C_6$, Cr_7C_3 and Cr_3C_2. The results obtained are given in the following table.

S/126/61/011/001/014/019
E032/E314

On the Electrical Properties of Chromium Carbides

Phase	Carbon concentration, %	ρ $\mu\Omega \cdot cm$	$R \cdot 10^4$ $cm^3/coul$	ε_T $\frac{\mu V}{deg}$	$\alpha_\rho \cdot 10^3$, deg^{-1}	$\delta = n_- u_-^2 - n_+ u_+^2$ $cm/V^2 sec^2$
Cr	0	18.9	+3.63	-	+2.5	-63.6
$Cr_{23}C_6$	5.33	127±2	+1.2+0.2	+2.76±0.02	+1.72±0.11	-4.6
Cr_7C_3	9.00	109±4	-0.38±0.03	-7.1±0.3	+1.06+0.05	+0.20
Cr_3C_2	13.33	75±5	-0.47±0.03	-6.7±0.5	+2.33±0.04	+0.52

The Cr_3C_2 and Cr_7C_3 powders were prepared by the method described by Kosolapova and Samsonov in Ref. 1 and 2.

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S/126/61/011/001/014/019
E032/E314

On the Electrical Properties of Chromium Carbides

The Hall coefficient was measured using direct current in a magnetic field of 12 500 Oe and the resistivity was measured potentiometrically. The thermo-electric coefficient was determined relative to commercial copper and then converted to lead (20-100 °C) and the temperature coefficient of resistance was determined in the temperature range 0-100 °C. The effect of the porosity of the specimens on R and ρ was determined by graphical extrapolation from experimental data for Cr_7C_3 and Cr_3C_2, while for $Cr_{23}C_6$ the formulae given by Juoretscke and Steinitz (Ref. 3) were used. The quantities ε_T and α_ρ were found to be independent of the porosity.
There are 1 table and 7 references: 5 Soviet and 2 non-Soviet.

Card 3/4

S/126/61/011/001/014/019
E032/E314

On the Electrical Properties of Chromium Carbides

ASSOCIATIONS: Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR (Institute of Metal Ceramics and Special Alloys of the AS Ukrainian SSR)
Khersonskiy pedagogicheskiy institut im. N.K. Krupskoy (Kherson Pedagogical Institute im. N.K. Krupskaya)

SUBMITTED: June 27, 1960

Card 4/4

15 2640
24 7760

S/126/61/012/004/021/021
E073/E535

AUTHORS: Verkhoglyadova, T.S., L'vov, S.N., Nemchenko, V.F. and Samsonov, G.V.

TITLE: Electric and galvanomagnetic properties of chromium nitrides

PERIODICAL: Fizika metallov i metallovedeniye, v.12, no.4, 1961, 622-624

TEXT: In the system chromium-nitrogen two stable nitride phases are known - Cr_2N and CrN. According to one of the authors (Ref.1: Samsonov G.V. Zhurnal strukturnoy khimii, 1960, 1, 447) these are characterized by a combination of metallic and ionic bonds, whereby the latter predominate to some extent. This is due to the high ionization potential of the nitrogen atom and the low acceptor ability of the incomplete d-shell of the chromium atom. This assumption on the nature of the chemical bond in nitride phases of chromium is confirmed by the results of X-ray structural investigations, according to which the chemical bond in the higher nitride Cr_2N approaches the type of bond of the chromium oxide Cr_2O_3. In this paper the electric and galvano-

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magnetic properties of chromium nitrides are studied. The compact specimens were produced by sintering briquettes with a porosity of 20-25% pressed from powder of electrolytic chromium. The sintering was at 950°C (for alloys with a composition approaching CrN) to 1300°C (for alloys approaching the composition of Cr_2N) for durations of 3 to 4 hours in nitrogen which was carefully purified from oxygen. The porosity of the specimens varied between 0 and 5%. This method of preparing specimens enabled avoiding changes in their phase state and the formation of carbonitride phases which are unavoidable in hot pressing of preliminarily manufactured chromium nitride powders. From thus produced specimens the specific electric resistance ρ and the absolute coefficient of thermo e.m.f. α_T, the Hall coefficient R and the thermal conductivity $\varkappa$ were determined. The results are entered in a table, which also contains data from the literature for pure chromium as published by A. Ye Vol (Ref.4: Stroyeniye i svoystva dvoynykh metallicheskikh sistem* v.1, Fizmatgiz, M., 1959) and S. Foner (Ref.5: Phys.Rev., 1957, 107, 1513). It was found that in contrast to most of the intermediate phases (including chromium

* (Structure and properties of binary metallic systems)

carbides), the resistance of chromium nitrides increases from the lower nitrides to the higher ones. Similarly, the Hall coefficient and the thermo e.m.f. coefficient increase with increasing nitrogen content. On the other hand, the thermal conductivity of the higher chromium nitrides is lower than of the lower chromium nitrides. This behaviour can be qualitatively explained on the basis of the electron structure of chromium proposed by Ye. S. Borovik and V. T. Volotskaya (Ref.7: ZhETF, 1959, 36, 1650) who assumed that the electric conductivity of Cr is basically due to highly mobile holes and electrons in the overlapping 4s- and 4p-bands. With some degree of approximation this enables utilizing the known expressions of the Hall coefficient and the electric conductivity for the case of two types of carriers and to determine the numerator $(n_- u_-^2 - n_+ u_+^2) = b$ of the Hall coefficient. The appropriate values are given in the table. The chromium nitride CrN can be classified as an electron semiconductor, the use of which is promising as a negative branch of high temperature thermocouples (particularly for operation inside nitrogen) and also for producing thermoelectric transducers of heat

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E073/E535

into electricity with an efficiency of up to 18-20% if paired for instance with MnSi. There are 1 table and 8 references: 7 Soviet-bloc and 1 non-Soviet-bloc. The English-language reference is quoted in the text.

ASSOCIATIONS: Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR
(Institute for Cermets and Special Alloys AS UkrSSR)
and
Khersonskiy pedagogicheskiy imeni N.K.Krupskoy
(Kherson Pedagogic Institute imeni N.K.Krupskaya)

SUBMITTED: March 7, 1961

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S/226/62/000/004/001/012
I003/I240

AUTHORS: L'vov, S.N., Nemchenko, V.F., and Samsonov, G.V.

TITLE: The influence of non-metal atoms on the electric properties of refractory compounds of transition metals

PERIODICAL: Poroshkovaya metallurgiya, no.4 (10), 1962, 3-10

TEXT: Refractory compounds of group IV-VI transition metals are becoming more widely used in modern industry. The authors investigated the Hall effect, electric resistivity and their moleelectric properties of the borides, carbides, and nitrides of the above metals at various compositions and of their mutual solid solutions. The electric properties change regularly, probably as a result of a change in the electron-affinity of the d-subshells of the metal atoms and the ionizing potential of the non-metal ions. There are 4 figures and 2 tables.

ASSOCIATION: Khersonskiy gosudarstvenny y pedagogicheskiy institut im. N.K. Krupskoy i Institut metallokeramiki i spetsial'nykh splavov AN USSR (The Kherson Government Pedagogical Institute im. N.K. Krupskaya and the Institute of Metal

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S/226/62/000/004/001/012
I003/I240

The influence of non-metal atoms...

Ceramics and Special Alloys, AS UkrSSR)

SUBMITTED: January 15, 1962

Card 2/2

S/220/62/000/004/003/012
I003/I203

AUTHORS: L'vov, S.N., Ivanchenko, V.F., Kislyy, P.S., Verkhoglyadova, T.S. and Kosolapova, T.Ya.

TITLE: Electric properties of borides, carbides, and nitrides of chromium

PERIODICAL: Poroshkovaya metallurgiya, no.4, 1962, 20-25

TEXT: The electric properties of the above compounds have not been sufficiently investigated. In the present work the electric resistivity, the Hall effect, the thermal emf , the thermal coefficient of electric resistivity and the coefficient of heat conductivity h of all borides, and nitrides of chromium were investigated at room temperature. The influence of carbon, boron, and nitrogen on the electric properties of their compounds with chromium is in good agreement with the regularities displayed by the borides, carbides, and nitrides of all group IV-VI transition metals. There are 3 figures and 1 table.

ASSOCIATION: Khersonskiy gosudarstvennyy pedagogicheskiy institut im. N.K. Krupskoi i Institut metallokeramiki i spetsial'nykh splavov AN USSR

Card 1/2

S/226/62/000/004/003/012
I003/I203

Electric properties of borides,carbides...

(The Kherson Government Pedagogical Institut im. N.K. Krupskaya, and the Institute of Metal Ceramics and Special Alloys AS UkrSSR)

SUBMITTED: January 15, 1962

Card 2/2

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S/185/62/007/003/013/015
D299/D301

24.7700

AUTHORS: L'vov, S.M., Nyemchenko, V.P. and Samsonov, H.V.

TITLE: Electrical properties of titanium carbide-titanium nitride alloys

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 3, 1962, 331 - 334

TEXT: The resistivity ρ, Hall coefficient R, thermo e.m.f. T and the thermal coefficient of resistivity C_0 of the system TiC-TiN, were measured. The study of the electrical properties of TiC-TiN alloys is important for ascertaining the influence (on these properties) of the relative concentration of C and Ni atoms (found in the same type of lattice) with different ionization-potential (11.24 and 14.51 ev., respectively). The alloys were prepared from powder mixtures, by hot pressing. The measurements were conducted by a method, given in the references. The obtained results are listed in 2 tables, together with the values of the effective concentrations n^* and the mobilities u^*, calculated by the pertinent formulas. The negative sign of the Hall coefficients and of the

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thermo e.m.f. shows that n-type conductivity prevails in the investigated alloys. Substitution of the C-atoms by Ni atoms is accompanied by a decrease in effective carrier concentration. The resistivity curve of the TiC-TiN alloys is non-monotonous, reaching its maximum at a concentration of 25 mol. % TiC (which is in agreement with theory). The increase in resistivity with TiC concentration, can be explained by the scattering of electrons by the carbon atoms, which can be regarded as impurity centers. This is confirmed by the concentration curve of [illegible]. The effective carrier-mobility in TiC is higher as compared to that in Ti, whereas the effective concentration is lower, owing to hybridization of 4s-electrons of Ti and 2p-electrins of C. The change in magnetic susceptibility follows that in carrier concentration. The conclusion is reached that (in the alloys under consideration), the principal carrier are the 4s-electrons of Ti with a small contribution by holes of the 3d-band in TiC, and a greater contribution of holes -- in TiN; the carbon and nitrogen are mainly acceptors of 4s-electrons. There are 2 figures, 1 table and 11 references: 9 Soviet-bloc and 2 non-Soviet-bloc.

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Electrical properties ...

S/185/62/007/003/013/015
D299/D301

ASSOCIATIONS: Instytut metalokeramiky i spetsial'nykh splaviv AN URSR (Institute of Powder Metals and Special Alloys of the AS UkrRSR), Kyyiv; Khersons'kyy pedinstytut (Kherson Pedagogical Institute)

SUBMITTED: May 6, 1961

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